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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SORKIN, DAVID L

ART UNIT PAPER NUMBER

1723

DATE MAILED: 06/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/874,376	<b>Applicant(s)</b> BRUNET ET AL.	
	<b>Examiner</b> David L. Sorkin	<b>Art Unit</b> 1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 1-18,41,42 and 47 is/are allowed.  
6) ☒ Claim(s) 43-46 is/are rejected.  
7) ☒ Claim(s) 19-40 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

2e

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01 March 2005 has been entered.

### ***Specification***

2. The amendment filed 20 December 2004 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The addition of the word "not" to the final sentence of paragraph [0047] is considered new matter. The sentence as amended to include the word "not" would contradict the first sentence of paragraph [0047], which states "Figure 4 shows a three sided mixing element angled with respect to the main direction of flow only". More generally, the application taken as a whole describes the embodiment of Fig. 4 as having angling like the delta wings of Cormack et al. (US 6,015,229) and that angling other than that of Fig. 4 yields improved, unexpected results. See especially paragraph [0054] where it is stated that "Figure 5 results in improved disinfection performance as compared with the mixing elements of Figure 4 ... This is by virtue of the non-planar relationship of the first normal, the second normal and the direction of fluid flow described above". Just looking

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at Fig. 4, one can see that the angle of the mixing element is consistent with Fig. 1, while the angles of the mixing elements in, for example, Figs. 5 and 6 are consistent with Fig. 2. Applicant is required to cancel the new matter in the reply to this Office Action.

### ***Claim Objections***

3. Claim 19 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 1. See MPEP § 706.03(k). Claim 1 already requires two mixing elements; stating that “the two mixing elements comprise first and second mixing” does not alter the scope of the claim. Claim 1 may need to be rephrased to provide antecedent basis for “first” and “second” mixing elements, but this does not justify the existence of duplicate claim 19.

4. Claim 23 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 22. See MPEP § 706.03(k). Though differently worded, these claims have the same scope, because the first and second elements are indistinguishable as claimed. This, of course, is not to say that the first and second elements are required to be indistinguishable, which is not the case.

5. Claim 33 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 32. See MPEP § 706.03(k). Though differently worded, these claims have the same scope, because the first and second elements are indistinguishable as claimed. This, of course, is not to say that the first and second elements are required to be indistinguishable, which is not the case.

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6. Claim 36 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 35. See MPEP § 706.03(k). Though differently worded, these claims have the same scope, because the first and second elements are indistinguishable as claimed. This, of course, is not to say that the first and second elements are required to be indistinguishable, which is not the case. Also, it would appear that claim 36 should have depended from claim 33 or 34 which mention a second apex portion, rather than claim 32 which only mentions a first apex portion.

7. Claim 39 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 38. See MPEP § 706.03(k). Though differently worded, these claims have the same scope, because the first and second elements are indistinguishable as claimed. This, of course, is not to say that the first and second elements are required to be indistinguishable, which is not the case.

8. Claims 20-40 are objected to as depending from at least one claim which is objected to.

***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claim 44 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement and description requirement. A triangular shape consisting essentially of a leading edge, a trailing edge and an apex, is not described by

and enable by the originally filed application. Triangles have three sided and three vertices. A triangle "consisting essentially of" two sides and one vertex is not possible.

11. Claim 46 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the description requirement. A system comprising first and second triangle shaped elements having different angles with respect to the direction of flow is not disclosed. Oppositely, the specification expressly states in paragraph [0046] that the angle "is held constant at 28 [degrees] in all embodiments".

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

13. Claim 44 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what is meant by "triangular shape consisting essentially of a leading edge, a trailing edge and an apex". The closed language "consisting essentially of" should be changed to "comprising" or the complete triangle should be recited.

### ***Claim Rejections - 35 USC § 102***

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

15. Claims 43-46 are rejected under 35 U.S.C. 102(a & e) as being anticipated by Cormack et al. (US 6,015, 299) and under 102(b) as being anticipated by the corresponding WIPO publication (WO 99/13975). All column and line numbers herein below refer to the US patent. Regarding claim 43, Cormack discloses a fluid radiation treatment system (see col. 1, lines 5-9) comprising two mixing elements (particularly, as seen in Fig. 2b, two adjacent elements 9 on the same light tube 13, in other words two elements 90 degrees apart with respect to the light tube axis), each mixing element comprising a surface having a first normal which is acutely angle with respect to a first plane (the plane parallel to the direction of flow which passes through the apex of each element, or through the centroid of each element, or through the adjacent vertices of the adjacent elements etc.) having a second normal substantially perpendicular to the direction of flow; acutely angled with respect to a second plane parallel to the direction of fluid flow and orthogonal to the first plane, the mixing elements being symmetrically disposed with respect to the second plane. Regarding claim 44, Cormack discloses a fluid radiation treatment system (see col. 1, lines 5-9), comprising at least one mixing element (9) for mixing a flow of fluid having a direction of flow, the at least one mixing triangular shaped element comprising a surface which is acutely angled with respect to each of two planes which are orthogonal to one another, each plane intersecting on a line substantially parallel to the direction of flow (See Figs. 2b and 3. So long as neither

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of the imaginary planes is chosen to be perpendicular to the element, any pair of perpendicular planes intersecting on a line parallel to the direction of flow would demonstrate that the system of Cormack is in accordance with the claim limitation.

There are an infinite number of such pairs of planes. For example, with reference to prior Fig. 1 of the instant application, which is essentially Cormack, the imaginary plane shown is not at an acute angle with respect to any normal to the element; however, for example, planes rotated relative to the shown plane about the longitudinal axis by plus and minus 45 degrees respectively would be a pair of perpendicular planes each forming an acute angle with each normal to the element. The same would be true for a pair rotated by plus 60 and minus 30, plus 50 and minus 40, etc.). Regarding claim 45, Cormack discloses an ultraviolet radiation water treatment system (see col. 1, lines 5-9 and 35-49) comprising at least one mixing element (9) for mixing a flow of water (4) having a direction of fluid flow, the mixing element comprising a surface having a normal which is acutely angle with respect to a first imaginary plane and a second imaginary plane which is orthogonal to the first plane, the first and second intersecting planes intersecting on a line parallel to the direction of flow. (See Figs. 2b and 3. So long as neither of the imaginary planes is chosen to be perpendicular to the element, any pair of perpendicular planes intersecting on a line parallel to the direction of flow would demonstrate that the system of Cormack is in accordance with the claim limitation.

There are an infinite number of such pairs of planes. For example, with reference to prior Fig. 1 of the instant application, which is essentially Cormack, the imaginary plane shown is not at an acute angle with respect to any normal to the element; however, for



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example, planes rotated relative to the shown plane about the longitudinal axis by plus and minus 45 degrees respectively would be a pair of perpendicular planes each forming an acute angle with each normal to the element. The same would be true for a pair rotated by plus 60 and minus 30, plus 50 and minus 40, etc.) Regarding claim 46, Cormack discloses a fluid radiation treatment system (see col. 1, lines 5-9) comprising first and second triangle-shaped mixing elements (9) being disposed so as to form a first angle with respect to at direction of fluid and a second triangle shaped mixing element disposed so as to form a second, different angle with respect to the direction of flow (see col. 4, lines 10-13, col. 6, lines 10-14, table I, Fig. 7).

#### ***Allowable Subject Matter***

16. Claims 1-18, 41, 42 and 47 are allowed. Claims 19-40 are also directed to allowable subject matter, but are objected to for the reason explained above.

#### ***Response to Arguments***

17. Applicant's arguments with respect to rejected claims 43-46 are moot due to the new grounds for rejection.


#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L. Sorkin whose telephone number is 571-272-1148. The examiner can normally be reached on 9:00 -5:30 Mon.-Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
David L. Sorkin  
Primary Examiner  
Art Unit 1723

DLS